CLAIMS

1. A method of forming a layer over a semiconductor substrate comprising:

providing a semiconductor substrate;

forming a first dielectric layer overlying said substrate, said first dielectric layer comprising a hydrophobic surface;

converting said hydrophobic surface to a hydrophilic surface;

scrubbing said hydrophilic surface; and

forming a second dielectric layer overlying said first dielectric layer.

2. The method of claim 1, wherein said first dielectric layer comprises silicon, carbon and nitrogen.

3. The method of claim 1, wherein converting said hydrophobic surface to said hydrophilic surface is by an oxygen plasma.

4. The method of claim 1, wherein said second dielectric layer comprises silicon, carbon, oxygen and hydrogen.

5. The method of claim 2, wherein converting said hydrophobic surface to said hydrophilic surface is by an oxygen plasma.

6. The method of claim 5, wherein said second dielectric layer comprises silicon, carbon, oxygen and hydrogen.

7. The method of claim 6, scrubbing said hydrophilic surface with a water-based clean.

8. The method of claim 7, wherein said water-based clean comprises ammonium hydroxide.

9. The method of claim 5, wherein said first dielectric comprises silicon, nitrogen, and carbon.

10. The method of claim 9, scrubbing said hydrophilic surface with a water-based clean.

11. The method of claim 10, wherein said water-based clean comprises ammonium hydroxide.

12. The method of claim 5, wherein the step of forming said first dielectric layer and the step of converting said hydrophobic surface to a hydrophilic surface, are performed in situ.

13. The method of claim 1, wherein forming said first dielectric layer and converting said hydrophobic surface to a hydrophilic surface are performed in situ.

14. The method of claim 1, wherein forming the first dielectric is plasma deposited and converting is by plasma.

15. A method of forming a layer over a semiconductor substrate comprising:

providing a semiconductor substrate;

forming a first dielectric layer overlying said substrate;

treating said first dielectric layer with an oxygen plasma;

cleaning said first dielectric layer with a water-based solution; and

forming a second dielectric layer overlying said cleaned first dielectric layer.

16. The method of claim 15, treating said first dielectric layer with said oxygen plasma such that a hydrophobic surface of said first dielectric layer is converted to a hydrophilic surface.

17. The method of claim 16, wherein the step of cleaning said first dielectric layer comprises scrubbing said first dielectric layer with said water-based solution.

18. The method of claim 17, wherein said water-based solution comprises ammonium hydroxide.

19. The method of claim 18, wherein said first dielectric layer comprises silicon, carbon and nitrogen.

20. The method of claim 15, wherein said first dielectric layer comprises silicon, carbon and nitrogen.

21. The method of claim 20, wherein the step of forming said first dielectric layer occurs in a first chamber.

22. The method of claim 21, wherein the step of treating said first dielectric layer with said oxygen plasma occurs in said first chamber.

23. A method for forming a semiconductor structure:

providing a semiconductor substrate;

forming a first dielectric layer comprising silicon, carbon and nitrogen overlying said substrate;

treating said first dielectric layer with an oxygen plasma;

scrubbing said first dielectric layer; and

forming a second dielectric layer overlying said first dielectric layer.

24. The method of claim 23, wherein said first dielectric layer has a hydrophobic surface.

25. The method of claim 24, wherein said step of treating said first dielectric layer converts substantially all of said hydrophobic surface to a hydrophilic surface.

26. The method of claim 23, wherein the step of scrubbing comprises scrubbing with a water-based cleaning solution.

27. The method of claim 26, wherein said water-based cleaning solution comprises ammonium hydroxide.

28. The method of claim 27, wherein the step of scrubbing comprises mechanical cleaning and chemical cleaning.

29. The method of claim 23, wherein forming the first dielectric layer comprises:

forming the first dielectric layer of silicon of silicon, carbon, and nitrogen; wherein forming the first dielectric and treating the first dielectric layer are performed in situ.